



BSI NEWSLETTER

The monthly electronic newsletter of Botanical Survey of India

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Director's column

The scientists of BSI published a new ginger, *Zingiber bipinianum* and new orchid, *Amitostigma pathakianum* from Northeast India, new mistletoe, *Scurrula paramjitii* and new cycad, *Cycas pschannae* from Andaman and Nicobar Islands, new grass, *Tripogon mahendragiriensis* from Mahendragiri hills of Eastern Ghats, and a new fungus, *Marasmius indopurpleostriatus* from Sikkim. Besides, a new tribe *Thylacospermeae* was described for the unique high altitude cold desert genus *Thylacospermum* (Caryophyllaceae) based on morphological characterization and phylogenetic evidence.

Apart from these, scientists of BSI also reported for the first time a genus of Orchidaceae from Nagaland, a species of Orchidaceae from Manipur, a species of Fabaceae from Jharkhand and four species of Fabaceae from Uttarakhand.

The scientific officials and research students of BSI conducted field tours to various phytogeographical regions of India for collecting specimens and data in connection with their projects. Some of them are: a field tour to Lohardagga and Gumla districts of Jharkhand for algal collection, to East, West, and Upper Siang districts of Arunachal Pradesh for pteridophyte collection, Koraput and Raygada districts of southern Odisha for collection of plant materials (having economical and medicinal value) for enrichment of Botanical Gallery of Industrial Section Indian Museum, and to North Bengal for conservation of medicinal and economical plants in AJC Bose Indian Botanical Garden. Happy browsing!

Paramjit Singh
Director, Botanical Survey of India, Kolkata

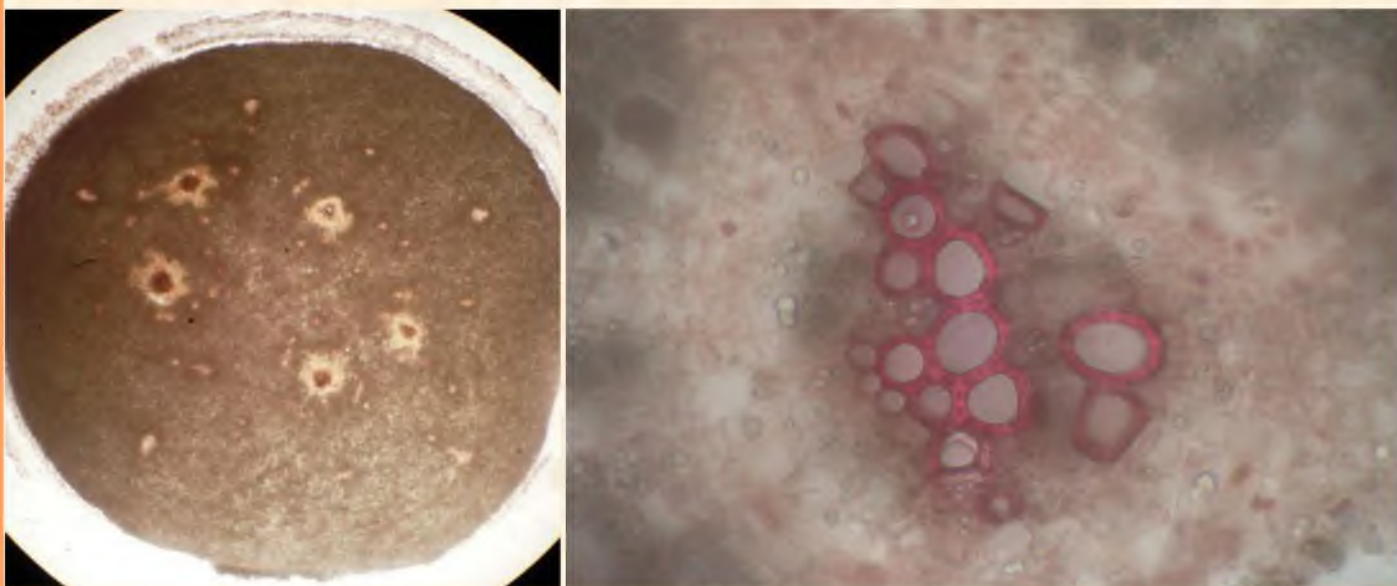


Dr. R.K. Gupta, Scientist 'D' conducted a field tour to Lohardagga and Gumla districts of Jharkhand (including Palkot Wild Life Sanctuary) from 13th September to 11th October 2015 in connection with the 'Algal Flora of Jharkhand'.

For the projects, 'Studies on wild mushrooms of Sikkim', 'Studies on the Macrofungi of AJCBIBG', 'Wood rotting fungi of Rajmahal hills', 'Taxonomic diversity and ecology of cyanobacteria and algae in the alpine regions of Eastern Himalayas' and 'Revision of the family Metzgeriaceae in India' identifications and descriptions are being made.

Dr. A.B.D. Selvam, Scientist 'D' identified 5 *Aconitum* species collected from Jammu and Kashmir, Dzukou valley of Nagaland and Darjeeling district of West Bengal as *A. laeve*, *A. rotundifolium*, *A. violaceum*, *A. nagarum* and *A. bisma* in connection with the project, 'Pharmacognostic studies on Medicinal Aconites of India'. Dr. Selvam also completed anatomical studies on the mother and daughter roots of *A. rotundifolium*.

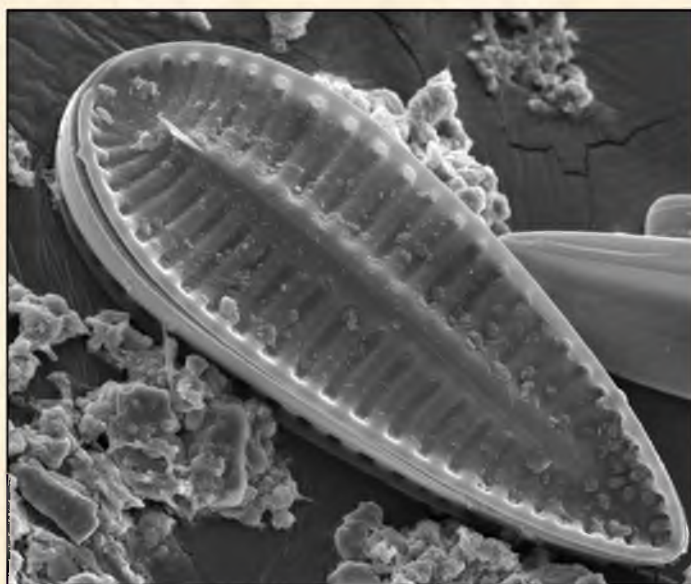
Dr. Monalisa Dey, Scientist 'B' studied isotype specimen of *Drepanolejeunea herzogii* obtained on loan from Friedrich-Schiller-Universität Jena, Germany (JE04002961). Dr. Dey also prepared database of 105 liverwort specimens. Ms. Pamela Saha, SRF prepared database of 75 moss specimens collected from Darjeeling District, West Bengal.



Aconitum rotundifolium daughter root— CS view showing 5 vascular stands (left) and an enlarged vascularstrand (right)

Meetings/programme organized and attended

Dr. Paramjit Singh, Director, BSI organized a steering committee meeting of the AICOPTAX at Narmada Hall, Indira Paryavaran Bhawan, Ministry of Environment, Forest and climate Change (MoEF & CC), New Delhi on 14.10.2015. Dr. Singh attended the meeting of the Research Advisory and Monitoring Committee of Centre for Ecological Sciences, Indian Institute of Science, Bangalore from 19th to 20th October 2015 and inaugurated the Capacity Building Training programme on 'Cultivation of RET Species of medicinal plants' organized by Srinagar University and National Medicinal Plants Board at Leh during 27th to 29th October 2015.



Surirella tenera (Diatom)

Publications

Das, S.K. and Gupta, R.K. 2015. Colonization of micro-algae on the painted iron surfaces. *Phykos* 45 (2): 9–12.

Dutta, A.K., Das, K. and Acharya, K. 2015. A new species of *Marasmius* sect. *Globulares* from Indian Himalaya with tall basidiomata. *Mycosphere* 6(5): 560–567.

AJC BOSE INDIAN BOTANICAL GARDEN, HOWRAH

Dr. S.P. Panda, Scientist 'B' conducted a tour to North Bengal including Darjeeling, Sukna, Pundibari from 30th September to 5th October, 2015 under the project 'Enrichment of medicinal plant section (Charak Udyan) of AJC Bose Indian Botanic Garden through survey and introduction of medicinal plants' and collected 43 medicinally and economically important plant saplings belonging to 38 species.

Regular maintenance of the plant saplings and orchids collected during the various tours in the Garden Nurseries and Mist Chamber are being carried out.

The Great Banyan tree developed 7 new roots, repaired 24 encaged roots with new bamboo caging. Besides, 16 aerial roots were covered in bamboo cages to train them as prop roots.

MAKE A WISH OR GO PLANT-MAD

The most famous resident of the 273-acre AJC Bose Indian Botanic Garden, the more than 250-year-old banyan tree, has several other illustrious neighbours. Metro takes stock of some of the green wonders in Shibpur's pride



DOUBLE COCONUT PALM (*Lodoicea maldivica*)

This tree is in the limelight at present for becoming a mother at the ripe age of 121 years, thanks to propagation — a method of getting new plants from existing ones. A native of the Maldives, it is the only one of its kind in India. The tree was introduced in the garden in 1894. "It is the longest living palm tree in the world, aged 121 years, and is currently bearing a seed that will take about five years to develop to its full form. This palm species survives up to 1,200 years," said Arabinda Pramanik, the joint director of Indian Botanic Garden.

The plant flowered after 100 years when it was cross-pollinated in 2012. "It was the first trans-border pollination in India when pollen from a male tree in the Maldives was brought here to cross-pollinate the female tree in our garden," said Basant Kumar Singh, senior preservation assistant at the garden.

Another characteristic of the Double Coconut Palm is its large leaf, so large that a single leaf can be used to roof a hut. It also has the heaviest seed, weighing 25 to 30 kg. The name comes from its appearance of two coconut fruits fused together.



GIANT WATER LILY (*Victoria amazonica* and *Victoria cruziana*)

These leaves large and strong enough to hold a sitting lady can be seen in several of the garden's 24 lakes. "The Giant Water Lily was introduced here in the early 19th Century from the Amazon and its leaves can hold weight up to 40kg," said Singh.

BRANCHING PALM (*Hyphaene thebaica*)

Found at the crossroads of the garden's many avenues is another rare flora that stands out among the green foliage. The Branching Palm was introduced in the garden from Africa in the early 19th century. "The garden has both male and female trees of this species. It is being propagated in large numbers and sent to various institutions largely for ornamental purposes," said joint director Pramanik.



WISH TREE (*Adansonia digitata*)

If you have a wish, do visit the Wish Tree or the Baobab. It is the next most popular tree in the garden after the Old Banyan Tree. "People, including several dignitaries, have made a wish touching the tree. Many believe that if one makes a wish hugging the tree, it comes true. Many people make a wish and then come back to pay homage as their wishes come true," Singh said. The national tree of Madagascar, the trunk of this tree has a water column. The tree has medicinal properties. In India, it is also found in Allahabad and Muzaffarpur. It has a life expectancy of 1,000-1,200 years.



WILD BANANA (*Ensete superbum*)

Standing right outside the palm enclosure, which houses the Double Coconut Palm, is a rare banana species with a wood-like fruit. "This plant is endemic to the Western Ghats. The bananas in this plant are woody and used for stomach ailments. This germinates from seeds whereas other banana plants germinate from rhizome (mass of roots)," Singh said.



MAD TREE (*Pterygota alata* var. *irregularis*)

The Mad Tree or Pagla Gachh gets its name from the fact that no two leaves in the tree are of the same shape or size. "This is because of the satellite gene in its chromosome that changes position. It is not found in the wild," Singh said.



KRISHNA VAT (*Ficus krishnae*)

This tree has a mythological tale. "Its leaves develop a pouch and Lord Krishna is supposed to have hidden his butter in the pouch. The leaf also resembles a peacock's feather and so double the link to mythology," Pramanik said.



NAKED FRUIT TREE (*Taxodium distichum*)

The seed in this tree is not to be found in a fruit. "It bears no fruit, however, its seeds hang from the tree," Singh explained. The Naked Fruit Tree or Mangrove Gymnosperm has breathing roots or knee roots. This species is the only one in India, introduced in the middle of the 19th Century from South America. "We have not been able to replicate it in the garden. Botanists have tried vegetative propagation through cuttings or air layering but so far that has not helped in multiplication," he said.

Text by Anasuya Basu
Pictures by Anup Bhattacharya

Publication

Pramanik, A., Sur, P.R., Baske, P.K. and Halder, A.C. 2015. Medicinal plant resources in traditional village-home gardens of Rayagada district, Odisha—a study report. In: S, Kumar (Ed.), *Recent advances in Ethnobotany*, pp. 61–69. Deep Publications, New Delhi.

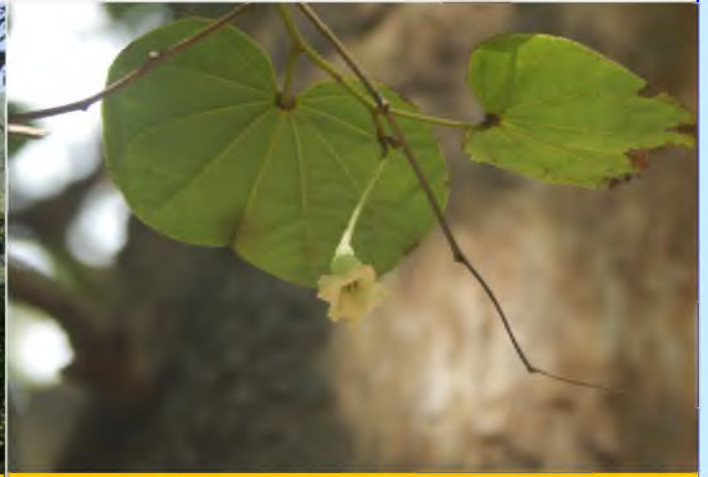
CENTRAL NATIONAL HERBARIUM, HOWRAH

A field tour was undertaken from 15th September to 2nd October 2015 from Betla National park, Latehar Dist., Jharkhand by Sri P.P. Ghoshal, Botanist and Sri Anand Kumar, Bot. Asst., collected specimens of 232 field numbers. In connection with the 'Revision of the genus *Fimbristylis* of family Cyperaceae', 'Taxonomic Revision of *Poaceae: Bambusoideae* in India', 'Flora of Vikramshila Gangetic Dolphin Wildlife sanctuary, Bhagalpur, Bihar', 'Flora of Jaldapara Wildlife Sanctuary, Jalpaiguri, West Bengal', 'Flora of Gautam Buddha Wildlife Sanctuary, Bihar' and

'Flora of Betla National Park, Latehar, Jharkhand' about 150 specimens were identified, descriptions and illustrations are being made.



Dry mixed deciduous forest at Betla



Piliostigma malabaricum (Fabaceae)



Martynia annua (Pedaliaceae)



Murdannia spirata (Commelinaceae)

Scanning Electron Microscopy

Total 44 samples were micro-graphed by scientific officials and research students of BSI, which include 15 samples of abaxial surface of bamboo leaves.

Public Service rendered

Dr. P. Venkateswara Prasanna, Scientist 'F' & HoO reviewed one manuscript for the Proceedings of National Academy of Sciences, India, Section B, Biological Sciences. Dr. V. Sampath Kumar, Scientist 'D' reviewed a manuscript for *American Journal of Botany*. Dr. Rajib Gogoi, Scientist 'D' reviewed one manuscript for *ENVIS Newsletter*, BSI and two for the journal *Phytotaxa*. Dr. Vinay Ranjan, Scientist 'D' reviewed manuscripts, one each for the journals *Taiwania* and *Nordic Journal of Botany*. Dr. S. Bandyopadhyay, Scientist 'B' reviewed one manuscript each for *Taiwania* and *Nelumbo*.

Dr. S. Bandyopadhyay provided information regarding author's name, Dr. Jubilee Purkayastha to IPNI for incorporation in the Author Query database.

16 images of type specimens of *Desmodium oblatum* and *Cruddasia insignis* were sent to Sri Pan Bo, Xishuangbanna Tropical Botanical Garden, Mengla, China. The images of the specimen of *Goodyera alveolata* were sent to Dr. Rinchen, Bhutan Biodiversity Board. 12 images of type specimens of *Knoxia microcarpa*, *Hedyotis glauca* and *Cuncea trifida* were sent to Dr. Bhanubong Bongcheewin, Department of Pharmaceutical Botany, Faculty of Pharmacy, Mahidol University, Bangkok, Thailand.

Identification of 16 specimens of grasses and 21 specimens of sedges were done for the Research scholars of Prof. Subir Bera, Dept. of Botany, University of Calcutta. Four plant samples were identified and issued authentication certificates to the researchers from different organisations.

Meetings attended

Dr. P. Venkateswara Prasanna and Dr. Vinay Ranjan attended a meeting of West Bengal State board for Wild life held on 08.10.2015 at Nabanna, Howrah.

Dr. Kumar Avinash Bharti, Scientist 'B' participated in two-day meeting to finalize the project entitled "Addressing Life-Style Diseases & Livelihoods, Using Medicinal Plants and its Bio-Actives" with Dr. N. Medury, Director, CFSD, New Delhi at Hqrs, BSI on 8th and 9th October 2015.

Visitors/students

Mr. Saiful Islam, CEO, Druk, Bangladesh for viewing the Roxburgh's Icones and Old paintings housed at Monocot; Ms. Baisakhi Sarkar, North Bengal University; Dr. D. Maity, Asst. Prof., Calcutta University, Kolkata and Dr. Joseph John, Scientist I/c, NBPGR, ICAR, Thiruchur, Kerala visited CNH.

Publications

Bandyopadhyay, S. and Bhattacharjee, A. 2015. Updating of records. *Curr. Sci.* 109(8): 1377.

Bhattacharjee, A. 2015. A new species of *Amitostigma* (Orchidinae, Orchidaceae) from India. *Phytotaxa* 230(3): 267–273.

Dey, S. and Prasanna, P.V. 2015. Cyperaceae: Mapanioideae and Cyperoideae. Tribes: Schoeneae and Sclerieae. In: P. Singh and S. Dey (Eds.), *Flora of India: Fascicle no. 27*. Botanical Survey of India, Kolkata.

Krishna, G. and Bandyopadhyay, S. 2015. (095) Proposal to include two terms in the Glossary. *Taxon* 64(5): 1067.

Kumar, V.S. 2015. Notes on distribution of *Crotalaria paniculata* Willd. and status of its variety *nagarjunakondensis* Thoth. *Indian J Forest.* 38 (2): 181–184.

Mastakar, V.K., Lakshminarasimhan, P. and Modak, M. 2015. *Crotalaria bifaria* L.f. (Leguminosae-Papilionoideae): A new distributional record for Eastern India. *Indian J. Pl. Sci.* 4(3): 13–16.

Shalini, S., Lakshminarasimhan, P. and Arisdason, W. 2015. Lectotypification of *Lepidagathis bella* (Convolvulaceae). *Telopea* 18: 391–393.

CENTRAL BOTANICAL LABORATORY, HOWRAH

Scientists of this centre identified 55 species of angiosperms in connection with the documentation of Flora and Ethnobotany of Balasore district, Odisha. Scientific officials of CBL digitized 180 ethnobotanical data from Balasore and 100 from Malakangiri districts of Odisha. Dr. A. K. Verma, Scientist 'B' and Ms. Monika Mishra, Bot. Asst. engaged in Cytological studies on *Abrus precatorius* and *Gloriosa superba* growing in AJCBIBG, Howrah and digitized data provided in labels of cytological herbarium (251 nos.) available in this centre. Ms. Sagari Chaudhury, JRF working on the project 'Ethnobotanical study of Lodha tribe of West Bengal and nutraceutical analysis of selected plant species' conducted a field tour to Purulia district, West Bengal for 3 days from 1st to 3rd October, 2015.

Publications

Baske, P.K., Halder, A.C., Dhole, P.A. and Siddhabatula N.R. 2015. Ethno-Medicinal Plants of Jajpur District, Odisha. *J. Econ. Taxon. Bot.* 39(1): 153–168.

Sujana K.A., Bhattacharjee, A., Agrawala, D.K. and Bandyopadhyay, S. 2015. Miscellaneous notes on *Bauhinia phoenicea* (Fabaceae: Caesalpinioideae). *Int. J. Innov. Res. Rev.* 3(3): 58–61.

INDUSTRIAL SECTION INDIAN MUSEUM, KOLKATA

One tour to Koraput and Raygada districts of southern Odisha was undertaken for collection of plant materials of economic importance and for displaying them at the Botanical Gallery. In total 43 plant materials were procured, of which 27 are different rice varieties.

For the project, 'The botanical paintings' by Roxburgh, the species of *Eugenia* (Myrtaceae), species of *Ficus* (Moraceae) and species of *Bryonia* (Cucurbitaceae) are being interpreted with updated nomenclature and descriptions. In connection with the ongoing project on digital database of BSIS, 72 specimens of Monocot and 365 specimens of dicot were listed and nomenclature of them are being updated.



Different varieties of rice

ANDAMAN & NICOBAR REGIONAL CENTRE, PORT BLAIR

Dr. Lal Ji Singh, Scientist 'D' & HoO conducted one tour for to Little Andaman from 12th to 19th October 2015 for collecting live plants. The following plants were collected and introduced in the Dhannikhari Experimental Garden cum Arboretum (DEGA) as a part of ex-situ conservation: 7 species of Rattans and Bamboos (seedlings/rhizomes), 4 species of Zingibers (seedlings/rhizomes), 13 tree species of different families (seeds/seedlings) and 17 species of medicinal and ornamental plants.

Dr. T.A.M. Jagadeesh Ram, Scientist 'D' identified 8 species of lichen (34 field numbers), whereas Dr. Sanjay Mishra, Scientist 'B' identified 3 species (6 field numbers) of angiosperm, while Dr. C.P. Vivek, Bot. Asst. identified one species (5 herbarium specimens housed at PBL).

Pledge taking ceremonies on International Day of Non violence, Observance of the Vigilance Awareness and Observance of the Rashtriya Ekta Diwas were organized at ANRC, Port Blair on 02.10.2015, 26.10.2015 and on 30.10.2015 respectively.

Public service rendered

Supplied 11 species of orchids to Dr. Dinesh Kumar Agrawala, Scientist 'C', SHRC, Gangtok.

Meetings/programmes attended

Dr. Lal Ji Singh participated in the inaugural Rally of 61st Wildlife Week Celebration, 2015 at Port Blair on 03.10.2015 and also in the valedictory function of the same event at Megapode Nest Conference Hall, Port Blair organized by Department of Environment and Forests, Andaman and Nicobar Administration on 08.10.2015.

Dr. Lal Ji Singh and Dr. Sanjay Mishra attended the Research Advisory Committee (RAC) meeting and a meeting of Andaman Adim Jan Jati Vikas Samiti at office of the Chief Conservator of Forests, Research and Working Plan, Van Sadan, Haddo, Port Blair on 20.10.2015 and on 24.10.2015 respectively.



New mistletoe species – *Scurrula paramjitii*

New cycad species – *Cycas pschannae*

Visitors/students

Teachers and students of Kamraj English Medium School visited the Dhanikhari Experimental Garden cum Arboretum (DEGA) on 08.10.2015.

Prof. S.S. Sharma of Dr. Y.S. Parmar University of Horticulture & Forestry, Solan visited DEGA on 15.10.2015.

Publications

Singh, L.J. 2015. *Scurrula paramjitii* L.J. Singh: A New Species (Loranthaceae) from the Andaman and Nicobar Islands, India. *Taiwania* 60(3): 123–128.

Srivastava, R.C. and Singh, L.J. 2015. A New Species of Indian *Cycas*. *Int. J. Curr. Res. Biosci. Pl. Biol.* 2(8): 35–37.

ARUNACHAL PRADESH REGIONAL CENTRE, ITANAGAR

Dr. Vineet Kumar Rawat, Scientist 'C' conducted a field tour to East, West and Upper Siang district of Arunachal Pradesh from 18th to 30th October 2015. Dr. Manish K. Kandwal, Scientist 'C' conducted a field tour to Kurungkumay district of Arunachal Pradesh from 18th October to 3rd November 2015.

Dr. P. Satyanarayana, Scientist 'D' & HoO, Sri B.B.T. Tham, Botanist prepared descriptions of 16 species for 'Flora of Pakke Tiger Reserve and Wild Life Sanctuary'.

Dr. Vineet Kumar Rawat, Scientist 'C' identified specimens of 10 field numbers and prepared descriptions for 15 species of the family Polypodiaceae of North East India.

Dr. Manish Kandwal Scientist 'C' identified specimens of 23 field numbers in connection with the Grass flora of Arunachal Pradesh.

In connection with Red Listing of the orchids of Arunachal Pradesh, Dr. Krishna Chowlu, Scientist 'B' confirmed the identity, assigned geo-coordinates and entered the data in excel sheet in the prescribed format.

Dr. Umeshkumar L. Tiwari, Scientist 'B' identified 14 species under 30 accessions from the unidentified specimens deposited at ARUN.

Dr. Souravjyoti Borah, Botanist prepared descriptions of 12 species for the Flora of Lohit District and Kamlang Wild Life Sanctuary.

Public services rendered

Dr. Umeshkumar L. Tiwari provided technical inputs/expertise to Sri Debanjan Acharya, a student of Hooghly Mohsin college, West Bengal for his Botany, B.Sc. (Hons.) project entitled, "Medicinal plants, floristic diversity and its status in Arunachal Pradesh".

Identified one species (*Peristylus richardianus*) from a photo sent by Dr. Tharaka, Sabaraguwu University, Sri Lanka.

Meetings attended

Dr. P Satyanarayana attended a meeting to discuss the status and removal of encroachment of Govt. Land in Itanagar under the chairmanship of the Chief Secretary, Govt. of Arunachal Pradesh on 15.10.2015 at Banquet Hall, Itanagar. Dr. P Satyanarayana and Dr. Manish K. Kandwal attended a meeting of Nagar Rajbhasha Samiti on 13.10.2015 at Indo-Tibetan Border Police, Itanagar.

Visitors/students

3 students from NERIST, Itanagar visited APRC for plant identification.

Publication

Chowlu, K. 2015. Synopsis of *Pholidota* W.J. Hooker (Orchidaceae) in Manipur, India with a newly recorded species. *Richadiana* 14: 4–17.



Pholidota articulata



Pholidota convallariae



Pholidota pallida



Pholidota pygmaea

ARID ZONE REGIONAL CENTRE, JODHPUR

The Scientists and staff of the centre are being involved in five major projects apart from maintenance of herbarium and garden activities.

Sri V. Maina, Scientist 'D' & HoO and Dr. R. Kumar, Scientist 'C' proceeded for a field tour to Navsari District, Gujarat on 15th October 2015 in connection with the 'Flora of Navsari District, Gujarat'.

Following plants were introduced in AZRC botanical garden *Asparagus gonocladus* (tubers), *Commiphora wightii* (4 cuttings), *Corchorus depressus* (2 plants), *Indigofera* sp. (2 plants), *Seddera latifolia* (1 plant) and *Tephrosia collina* var. *lanuginocarpa* (seeds).

Phenological data of 33 plants species of AZRC botanical garden were recorded during this month.



Barleria longiflora at AZRC Botanical Garden

Meeting attended

Dr. S.L. Meena, Scientist 'D' attended Rajasthan State Wildlife Board meeting, chaired by Hon'ble Chief Minister of Rajasthan at Jaipur on 17.10.2015.

BOTANIC GARDEN OF INDIAN REPUBLIC, NOIDA

Under multiplication programme, altogether 165 ornamental plants (*Bougainvillea* 105 nos. and *Aloe vera* 60 nos.) were planted in new pots, besides, Planting of 29 winter annuals for landscaping.

Dr. Kuldip Singh Dogra, Scientist 'C' studied seed germination of 14 species.

Visitors/students

Total 440 visitors (including 216 students, 10 teachers, 210 Indian and 4 foreign nationals) visited BGIR during this month.

Training

Dr. Sheo Kumar participated in a training on operation of 'Public Financial Management System' organised by the office of Controller General of Accounts, Ministry of Finance, Government of India conducted at ISTM, Old JNU Campus, New Delhi on 27.10.2015.

Publication

Dogra, K.S., Chauhan, S. & Jalal, J.S. 2015. Assessment of Indian medicinal plants for the treatment of asthma. *J. Med. Pl. Res.* 9(32): 851–862.

CENTRAL REGIONAL CENTRE, ALLAHABAD

In connection with the project, 'Lichens of Terai region of Uttar Pradesh', Ms. Pooja Gupta, SRF conducted a field tour to Terai region of Balrampur and Shravasti districts from 30th September to 14th October 2015 and collected 64 specimens. For the ongoing projects, 'Floral diversity of Upper Ganga Ramsar Site, Uttar Pradesh', 25 species were identified and 'Floristic diversity of Parvati Aranga Wildlife Sanctuary and adjoining Tikri forest area, Gonda, Uttar Pradesh', description of 12 species were completed. Similarly, for the 'Taxonomic studies on lichenised non thelotremoid Indian Graphidaceae', 'Revisionary studies on family Roccellaceae' and 'Lichens of Rajasthan, Kutch and Gujarat' total 11 species were identified. In addition, 145 earlier collected specimens housed at BSA were also identified. Phenological data of 8 species from experimental botanical garden of CRC was recorded during this month.

55 digital Images of herbarium specimens of different species of *Ficus* and *Andrographis* were sent to SRC, Coimbatore in connection with their studies on these genera.

Meeting attended

Dr. Arti Garg, Scientist 'D' attended a meeting of Central Government Employees Welfare Co-ordination Committee at AG office, Allahabad on 13.10.2015.

Visitors/ students

A group of 50 students of BHMS and 2 Professors of Rajkiya Lal Bahadur Shastri Homeopathic Medical college and Hospital, Shantipuram, Phaphamau, Allahabad visited the herbarium, garden and library of CRC on 12.10.2015.

Publication

Singh, V. and Singh, R.K. 2014. *Ex-situ* conservation of *Oroxylum indicum* Kurz using root suckers at experimental garden, BSI,CRC, Allahabad. *Bioherald* 4(2): 56–58.



BHMS students at the herbarium of CRC, Allahabad



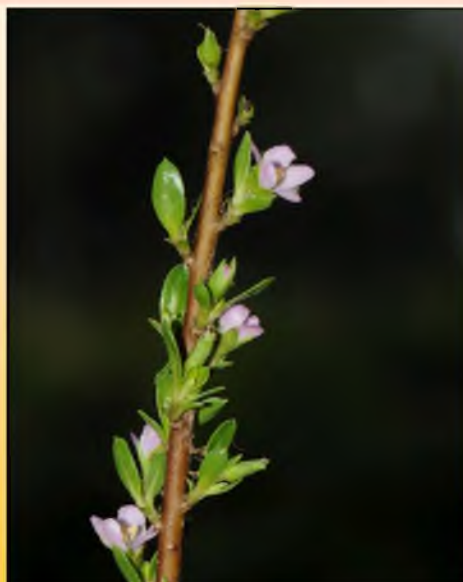
BHMS students at the botanical garden of CRC, Allahabad

DECCAN REGIONAL CENTRE, HYDERABAD

Dr. J. Swamy, Bot. Asst. conducted a field tour to 7 sacred groves viz., Kondapalli, Gunadala Matha, Kolleti Kota and Kanakadurga Konda of Krishna district and Nagarjuna Konda, Kotappakonda and Kondaveedu of Guntur district of Andhra Pradesh from 8th to 13th October 2015 and collected specimens of 185 field numbers. Sri K. Chandra Mohan, JRF conducted a field tour to Satkosia Tiger Reserve, Odisha from 8th to 21st October 2015 and collected specimens of 75 field numbers.



Leonotis nepetifolia



Rotula aquatica



Sesamum orientale

Identified 47 species in connection with Flora of Seshachalam Biosphere Reserve (7 species by S. Nagaraju, Bot. Asst.), Flora of Kawal Tiger Reserve (20 species by Ms. P. Annamma, JRF) and Flora of Greater Hyderabad (20 species by Dr. J. Swamy, Bot. Asst.). Dr. L. Rasingam, Scientist 'C' documented 16 species in connection with Flora of Nagarjunasagar – Srisailem Wildlife Sanctuary.

Dr. T. Pullaiah, S.K. University, Ananthapur donated 91 herbarium specimens collected from Thumalapalle uranium mining area to DRC, Hyderabad.

Visitors /students

Dr. R.V. Kammathy, ex scientists from BSI, Mr. M.B.Honnuri, Scientist B from ICFRE, Hyderabad and P. Ravi Raj, Lecturer from SRNK College, Banswada, Nizamabad visited the centre.

Publications

Chorgha, A., Dey, S., Prasad, K., Prasanna, P.V. and Rao. Y.V. 2015. *Tripogon mahendragiriensis* sp. nov. (Poaceae) from the Eastern Ghats of Odisha (Orissa) state. *Nord. J. Bot.* 33(6): 655-658.

Leela Rani, P., Yakadri, M., Ramprakash, T., Swamy, J., Spandana Bhatt, P. and Pallavi, C. 2015. Weed Flora at a glance, pp. 1-38. Professor Jayashankar Telangana State Agricultural University Press, ARI Campus, Rajendranagar, Hyderabad.

EASTERN REGIONAL CENTRE, SHILLONG

In connection with Taxonomy, phylogeny and *ex-situ* conservation of Micro-fungal diversity of Northeast India with special emphasis on fungi associated with endemic and threatened plants of Meghalaya', a local field tour to Barapani Botanical garden was undertaken by Dr. Ashish V. Prabhugaonkar, Scientist 'B' on 26.10.2015 and collected *Aquilaria* sp. to study the associated endophytic fungi using 3-step sterilization technique. Dr. Prabhugaonkar identified 6 species of fungi (up to genus level). Identified total 33 species for Flora of Eastern Nagaland by Dr. N. Odyuo, Scientist 'D' and Dr. R. Daimary, Bot. Asst.; for Amchang Wild Life Sanctuary by Smt. Nandita Sarma; for Yangoupokpi Lokchao Amchang Wild Life Sanctuary, Manipur by Shi R. Meitei, Bot. Asst. Correction of manuscript was continued for Flora of Laokhowa Wild Life Sanctuary by Dr. Chaya Deori, Scientist 'D' and Sri S.R. Talukdar, Sr. Prev. Asst.; for South Garo Hills, Meghalaya by Sri Dilip Kumar Roy, Bot. Asst. Study of Bryoflora of Mizoram and Revision of genus *Riccia* (Marchantiophyta) in India being continued by Dr. S.K. Singh, Scientist 'D'.

Dr. M. Murugesan, Scientist 'B' and Sri L.R. Meitei, Bot. Asst. recorded phenological data of 24 species in connection with *ex-situ* conservation of Endemic, threatened and economically important plants of the region and recorded phenological data of species growing in the Garden.

For Micro-propagation of RET Plants of Northeast India, Dr. A.A. Mao, Scientist 'E' & HoO and Ms. L. Ibemhal Chanu, Bot. Asst. prepared set up for multiple shoot induction experiment of 300 nodal explants of *Rhododendron coxianum* (Ericaceae) and planted 50 plants of *R. coxianum* in the greenhouse of ERC.

For Micropropagation, Phytochemical Screening of Medicinal Plants and Molecular Characterization of selected species, Dr. Deepu Vijayan, Scientist 'B' extracted DNA from *Paphiopedilum druryi*, *P. fairrieianum*, *P. hirsutissimum*, *P. insigne*, *P. spicerianum* and *P. villosum*.

Public service rendered

Identified 8 specimens received from various institutions.

Students/visitors

19 Assistant Professors, 4 Research Scholars and 173 students visited the Centre from various institutions, colleges and universities.

Publications

- Jakha H.Y., Deb, C.R., Singh, S.K., Verma, D., Dey, S. and Jamir, N.S. 2015. *Pendulorchis* (Orchidaceae) - A new generic record for Nagaland, India. *Keanean J. Sci.* 4: 31–34
- Pagag, K., Singh, S.K. and Roy, D.K. 2015. Notes on blooming of a rare orchid *Flickingeria macraei*. *Keanean J. Sci.* 4: 35–38.
- Singh, D.K. and Singh, S.K. 2015. Manual of Liverwort and Hornworts of Himachal Pradesh, India. Bishen Singh Mahendrapal Singh, Dehradun.
- Singh, S.K., Verma, D., Kholia, B.S., Sharma, S., Sinha, B.K. and Pandey, S. 2015. Pteridophytes of Tawi Wildlife Sanctuary, Mizoram, India. *Keanean J. Sci.* 4: 19–30.
- Talukdar, A.D., Verma, D., Roy, D.K. and Choudhury, M.D. 2015. A new species of *Zingiber* (*Zingiberaceae*–*Zingibereae*) from Northeast India. *J. Jap. Bot.* 90: 293–298.

NORTHERN REGIONAL CENTRE, DEHRADUN

Dr. B.S. Kholia, Scientist 'D' conducted a field tour to Champawat and Pithoragarh districts of Kumaon from 11th to 17th October 2015 and collected 36 live plants for introduction in NRC, Garden. Identified 101 species and described 50 species of Angiosperm for the Flora of Uttarakhand (vol. V), Floristic Diversity and Phytosociological study of Simbalbara National Park, Flora of Nandhour Wildlife Sanctuary, Flora of Sonanadi Wildlife Sanctuary, Revision of family Bignoniaceae, Cyatheaceae and genus *Lepisorus* (Sm.) Ching in India.

Total 36 species, including 29 Pteridophytes and 7 Angiosperms were collected from Champawat and Pithoragarh districts of Kumaon and introduced in NRC office garden.

Dr. S.K. Srivastava, Scientist 'E' & HoO inspected and prepared Evaluation report for the Augmentation of Lead Garden (Phase II) of G.B. Pant Institute of Himalayan Environment and Development, Kosi-Katarmal, Almora and sent to Director, BSI for further needful.



Ichnocarpus frutescens in flowering at Simbalbara Wildlife Sanctuary



Zingiber bipinianum



Thylacospermum caespitosum



Arachniodes aristata



Aleuritopteris dealbata

Swachh Bharat Abhiyan

Staff of NRC observed and participated in Swachh Bharat Abhiyan on 02.10.2015 and cleaned the office campus and surrounding areas on this occasion.

Public service rendered

Identified 10 species for various institutions/colleges/Universities of Uttarakhand.

Visitors /students

78 visitors, including 67 students from the College of Forestry, Uttarakhand University of Horticulture & Forestry, Ranichauri; S.G.R.R. Institute of Science & Technology, Division of Life Sciences, Dehradun; Dolphin (PG) Institute of Biomedical & Natural Sciences, Dehradun visited the centre during this month.



Staff of Northern Regional Centre, DehraDun during Swachh Bharat Abhiyan



Staff of Northern Regional Centre, DehraDun cleaning their campus during Swachh Bharat Abhiyan

Publications

Ambrish, K. and Srivastava, S.K. 2015. New Plant Records of Family Fabaceae for Uttarakhand. *Ind. J. Forest.* 38(2): 151–152.

Pusalkar, P.K. 2015. Redefining *Thylacospermum* and a new tribe Thylacospermeae. *J. Jap. Bot.* 90(5): 351–355.

SIKKIM HIMALAYAN REGIONAL CENTRE, GANGTOK

Dr. M. Gangopadhyay, Scientist 'D' & HoO updated nomenclature of the species of the family Rubiaceae in connection with Flora of India project.

Dr. D.K. Agrawala, Scientist 'C' studied 60 orchid specimens and finalized their identity, assigned geo-coordinates and entered the data in excel sheet for the project, "Red listing of Orchids of Eastern Himalaya as per IUCN criteria". Dr. Agrawala also identified 50 and illustrated 4 orchid species based on live plants and from unidentified specimens at BSHC. Dr. Agrawala also collected 8 orchid samples including *Pleione maculata* from fallen tree logs and received 13 orchid species in live condition from ANRC, Port Blair which were introduced in the campus garden. Dr. Agrawala reviewed the manuscript, "Studies on the Orchids of Maharashtra" received from BSI, Hqrs., Kolkata. Sri S.K. Rai, Pres. Asst. identified 24 species from unidentified sheets at BSHC.

Meeting(s) and programmes attended

Dr. Gangopadhyay and Dr. Agrawala participated in the Foundation Day Celebration Meeting of ICAR–National Research Centre for Orchids on 05.10.2015 at Pakyong, Sikkim. Dr. Agrawala attended GBPIHED, Sikkim Unit on 08.10.2015 as a member of interview board for selection of project staff. Dr. Sankararao Mudadla, Scientist 'B' and Dr. David L. Biate, Scientist 'B' attended NSDL Awareness Program in Gangtok on 09.10.2015.



Pleione praecox (Orchid)



Herpysma longicaulis (Orchid)



Pleione maculata (Orchid)

Visitors/students

Dr. D. Barman, NRCO, Pakyong, Sri Ravi Kishore, NRCO, Pakyong, Sri M.K. Subba, Joint Director, State Horticulture Dept., Govt. of Sikkim, Sri V.G. Nair (Group CEO) and Dr. A. Saklani (Vice President), SAMI Labs Limited, Bangalore visited BSHC. Besides, 6 students from Sikkim University, 20 B. Sc. students from Science College, Kokrajhar, Assam and Ph.D. scholars from Sikkim University visited the centre.

SOUTHERN REGIONAL CENTRE, COIMBATORE

Dr. J.H. Franklin Benjamin, Scientist 'B' and Sri R.G. Vadhayar, Bot. Asst. conducted a plant exploration tour to Malabar Wildlife Sanctuary from 5th to 16th October 2015 and collected specimens of 167 field numbers.

Dr. M. Palanisamy, Scientist, 'D' and Sri S.K. Yadav, Bot. Asst. identified a total of 15 field numbers of seaweed specimens from previous collection for seaweed Flora of Karnataka coast. Dr. K.A.A. Kabeer, Scientist 'D' and Sri A. Ravi Kiran, Bot. Asst. identified specimens of 17 field numbers for the project, 'Floristic studies in Kodaikanal Wildlife Sanctuary, Tamil Nadu, India' and prepared the list of endemic and threatened plants from the Sanctuary. For Cyperaceae of Tamil Nadu, Sri K. Yarrayya, Sr. Pres. Asst. consulted Fischer herbarium (FRC), IFGTB, Coimbatore on 25.09.2015 and indexed 70 specimens.

In connection with the 'ex-situ conservation of endangered and threatened plants' Dr. S. Kaliamoorthy, Scientist 'D' and Dr. M.Y. Kamble, Scientist 'C' conducted local field trips to Ghat road, Manjakuttai and Shevaroyan hill top, Yercaud on 13th, 15th, 22nd and 23rd October 2015. During these trips, they studied the population status of *Habenaria longicornu*, *H. longicorniculata*, *H. rariflora*, *H. heyneana* and *H. grandifloriformis*, and introduced 18 species of orchids in the garden of National Orchidarium and Experimental Garden (NO & EG), Yercaud. Dr. Kaliamoorthy and his team multiplied 71 plant samples (including 29 samples of orchids and 42 samples of other plants), transplanted 6 plants, developed 44 seedlings and 20 cuttings. They also recorded the phenology of 26 species, including 16 species of orchids and 10 species of other Angiosperms.

Scanning Electron Microscopy

Dr. Gnanasekaran, Bot. Asst. studied the pollen grains of 2 species of Andrographinae (*Haplanthus* spp.), whereas Dr. J.V. Sudhakar, Bot. Asst. studied *Ficus dalhousiae* and *F. beddomei* and took 8 SEM micrographs.

Public services rendered

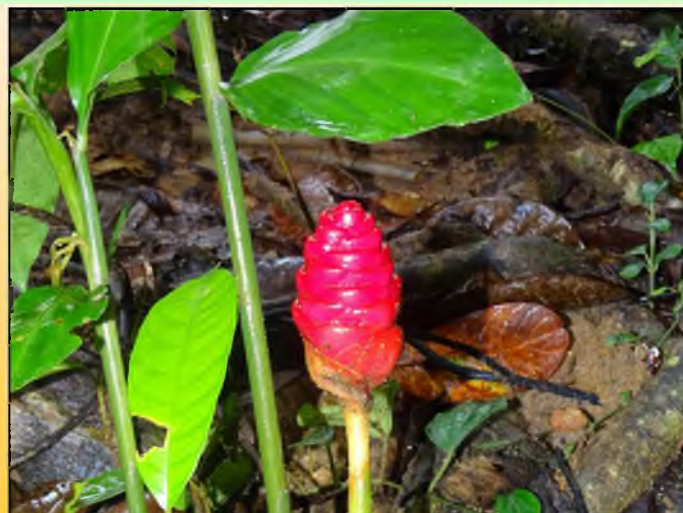
Dr. Palanisamy acted as an examiner of a Ph.D. thesis on Marine Biology, Annamalai University on 05.10.2015. Dr. J.V. Sudhakar helped officials of Tamil Nadu Forest Department for Identification of *Ficus* species at Sircarpathy (Pollachi, Coimbatore Dist.) Ficatorium on 13.10.2015.

Scientific officials of SRC conducted theory classes to PG students of Tamil Nadu Agricultural University on topics related to plant taxonomy (Flora, Manual and catalogues; Floral formula and floral diagram; Revisionary studies and Monographs; Herbarium and Plant identification Techniques etc.). The training on herbarium preparation was also imparted to the PG students.

43 plant samples were identified for research scholars and students from various institutions/colleges/Universities.



Elaeocarpus serratus (Elaeocarpaceae)



Zingiber zerumbet (Zingiberaceae)

Ph.D. Viva-voce examination

Dr. G. Gnanasekaran successfully defended his work on 'A systematic study on the genus *Andrographis* Wall. ex Nees (Acanthaceae) in India' during his Ph.D. viva-voce held at SRC, Coimbatore on 30.10.2015.



Dr. G. Gnanasekaran presenting about his work during Ph.D. viva-voce held at SRC, Coimbatore

Workshop attended

Dr. G.V.S. Murthy, Dr. K.A.A. Kabeer and Sri A. Ravi Kiran attended "A National Workshop on Alien Invasive species - Threats, Challenges and Mitigation" held at Tamilnadu Forest Academy, Coimbatore on 01.10.2015.

Visitors/ students

During this month, 371 students, 4 research scholars and 34 lecturers/professors/scientists visited the herbarium and library of SRC and 1279 persons in 147 parties visited NO & EG, Yercaud.

Publications

Singh, R.K. 2015. Lectotypification of Indian taxa of *Leucas* (Lamiaceae). *Telopea* 18: 395–424.

Gnanasekaran, G. and Murthy, G.V.S. Lectotypification of four names in *Andrographis* (Acanthaceae). *Phytotaxa* 227: 175–181.

Kottaimuthu, R. and Gnanasekaran, G. *Fimbristylis karthikeyanii*, a new name for *F. breviculma* Govind. (Cyperaceae). *Telopea* 18: 433–434.



Dr. J.V. Sudhakar helping in identification of *Ficus* species at Sircarpathy (Pollachi, Coimbatore Dist.) Ficitorium



Students of TNAU learning herbarium methodology at preparation unit of SRC, Coimbatore

WESTERN REGIONAL CENTRE, PUNE

During this month, total 121 angiosperm specimens were identified from Biligiri Rangaswamy Temple (BRT) Wildlife Sanctuary, Sharavathy valley Wildlife Sanctuary in Karnataka and from Madei Wildlife Sanctuary, Goa. Identification of 23 micro-fungal species was also done.

Dr. P. Lakshminarasimhan, Scientist 'E' & HoO visited the Lead Botanic Garden of Shivaji University, Kolhapur for site inspection under Assistance to Botanic Gardens Scheme of MoEF & CC on 5th and 6th October, 2015 along with Dr. J. Jayanthi, Scientist 'D', Dr. J. S. Jalal, Scientist 'C' and submitted the report.

Vigilance awareness week

Dr. P. Lakshminarasimhan administered the pledge on 26.10.2015 to all staff of BSI, WRC, Pune in connection with the Vigilance Awareness Week (from 26th to 31st October, 2015) on the theme "Preventive Vigilance as a tool of Good Governance".

Meeting/programmes attended

Dr. P. Lakshminarasimhan received Hon'ble Union Minister of MoEF & CC, Sri Prakash Javedekar at Pune airport on 20.10.2015.

Dr. P. Lakshminarasimhan, Scientist 'E' & HoO attended the 3rd Steering Committee Meeting of All Indian Coordinated Project on Taxonomy (AICOPTAX) held at MoEF & CC Office, New Delhi on 14.10.2015 under the Chairmanship of Prof. H.Y. Mohan Ram.

Dr. Rashmi Dubey, Scientist 'D' attended a Training Programme in Next Generation Sequencing Data Analysis part of "Advanced Next Generation Sequencing-Bioinformatics and Data Analysis" held at MIT, Anna University, Chennai from 14th to 17th October 2015.

Public Service Rendered

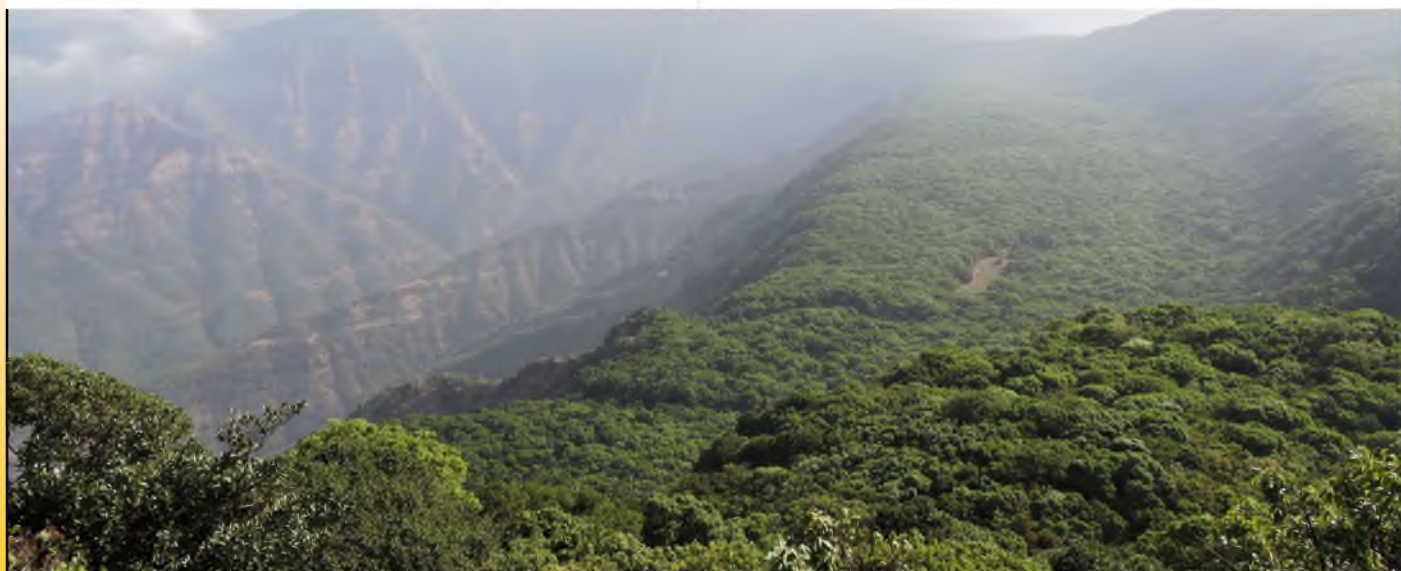
Identified and authentication certificates were issued to 20 students from B. Pharm., M. Pharm. colleges, Ph.D. and P.G. students from different institutions as well as to the Forest Department.



Erythrina subumbrans (Fabaceae)



Dr. P. Lakshminarasimhan and Dr. J. Jayanthi inspecting the Lead Botanic Garden of Shivaji University, Kolhapur



Dense semi-evergreen forest in Koyana Wildlife Sanctuary

PLANT OF THE MONTH

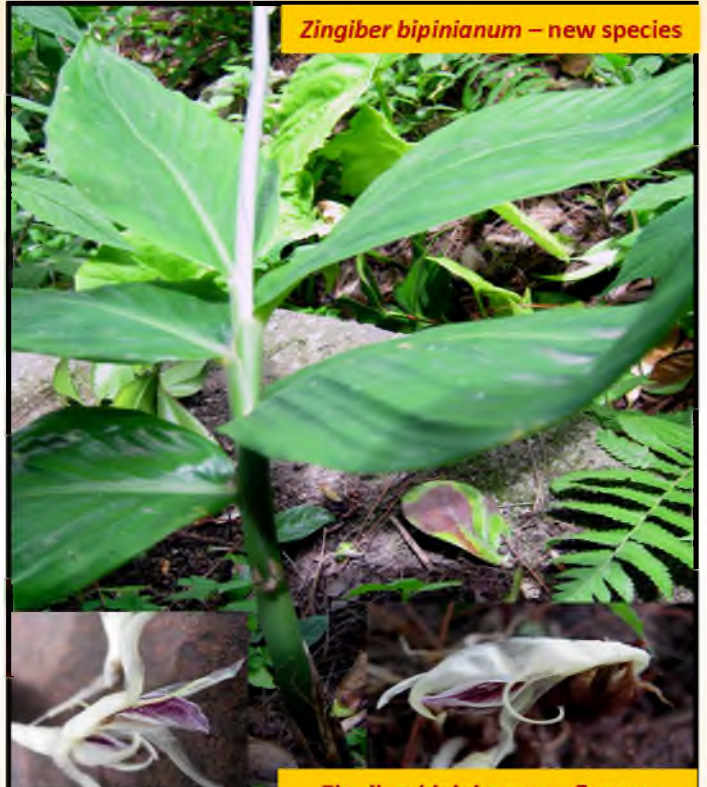


Stapelia gigantea N.F. Br. (ASCLEPIADACEAE) known as African starfish for its star shaped flower is native to eastern Africa. Planted worldwide as an ornamental succulent.

By Dr. M.U. Sharief



Monochoria hastata (Pontederiaceae)



Zingiber bipinianum – new species



Zingiber bipinianum – flowers

PROMOTIONS

Congratulations to three scientists, who attended the Departmental Assessment Committee (external) meeting of the Ministry of Environment, Forest and Climate Change (MoEF & CC), New Delhi for *in-situ* promotion under Flexible Complementing Scheme (FCS) and promoted to next higher grade w.e.f. 10.10.2015.

- * Dr. M.Y. Kamble, NO & EG, SRC, Yercaud promoted to Scientist 'D'
- * Dr. K. Karthigeyan, CNH, Howrah promoted to Scientist 'D'
- * Dr. O.N. Maurya, CNH, Howrah promoted to Scientist 'C'

Thanks to all the scientists and staff of various regional centres and units of Botanical Survey of India for contributing to this newsletter

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